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# BLOW IT OUT

## Installing JBA's Headers and Exhaust on a VVT-i V-8 Engine



**O**VER THE PAST FEW YEARS, WE'VE NOTICED AN INCREASED AMOUNT OF NOT ONLY PERFORMANCE MODIFICATIONS BUT COMPLETE ENGINE SWAPS. WHEN TRADING UP FOR MORE HORSEPOWER AND TORQUE, IT'S OFTEN A BIG V-8 THAT IS EXCHANGED. KNOWN FOR THEIR RELIABILITY, TOYOTA V-8 ENGINES ARE BECOMING MORE TALKED ABOUT AND ADDED TO TRAIL RIGS, RACE VEHICLES, AND EVEN DAILY DRIVERS.

This year, Toyota released its new VVT-i V-8 engine for the Toyota fullsize vehicle lineup. VVT-i (Variable Valve Timing with Intelligence) varies the timing of the intake valves by adjusting the timing chain connecting the intake and exhaust camshafts. A pump then applies hydraulic pressure to adjust the gear driving the timing chain. This improves torque in all speed ranges as well as increases fuel economy and reduces exhaust emissions.

Two of the most common performance

upgrades you will find on any modified vehicle are the installation of headers and exhaust. We turned to JBA Performance Exhaust of San Diego, California, to install the company's own JBA Cat4ward Headers (PN 2011S) and JBA Evol Exhaust System (PN 30-9014).

The installation of these products require adequate workspace, common mechanic's tools, and a general mechanical know-how, with a reasonable degree of experience wrenching on vehicles. The majority of auto

enthusiasts with proper resources will have little difficulty installing these products. Please be sure to not only keep note of the instructions we talk about in our magazine but also read carefully through the included instruction manual that will be provided with your product. If after reading the instructions you are uncomfortable with installing these products on your own, please consult a professional mechanic. Let's get started with the installation of our new headers.

**PARTS LIST**

- (1) Driver-side header assembly
- (1) Passenger-side header assembly
- (6) 3/8x2-1/2-inch collector bolts, nuts, and washers
- (2) Exhaust pipe gaskets (rings)

**Step 1.** Place your vehicle in a location where the floor is flat and solid, with a good amount of lighting. Placing shop lights above and below your vehicle will be a tremendous help throughout your installation process. Keep in mind that working on a hot engine is never a good time. Allow your engine to cool off completely before wrenching. Heat also causes metal to expand and can make the removal of fasteners difficult at best. Disconnect the battery cables from your battery. Raise your vehicle enough to gain a good amount of access to the bottom of your exhaust manifold flanges. Use large-base jackstands to support the vehicle and block both front and rear tires to prevent the vehicle from rolling off the jackstands. Although it was not necessary, we removed both front tires from the vehicle to allow for more working room.

**Step 2.** Spray WD-40 or some type of penetrating oil on all accessible fasteners and fittings before attempting to remove them.

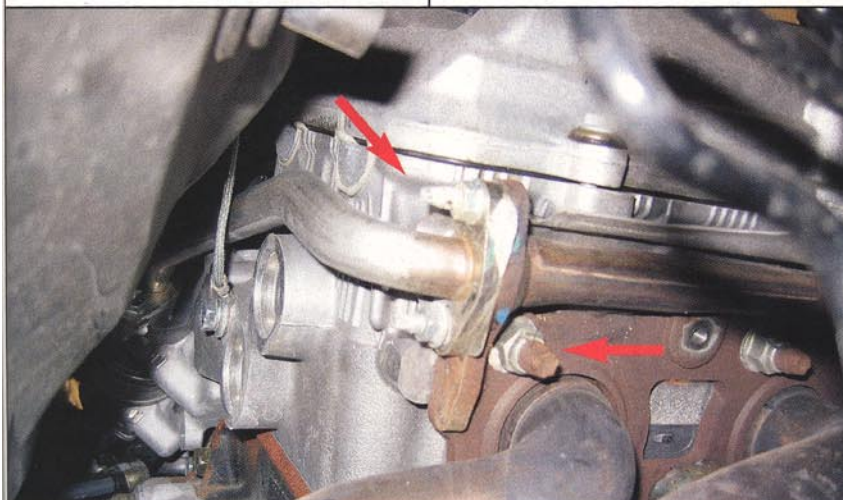


**Step 3.** From underneath the vehicle, disconnect the exhaust system from the exhaust manifolds by unbolting the three bolts at the collectors. Then unbolt the driver-side catalytic converter from the exhaust assembly and temporarily remove it from the vehicle. Be careful to watch for O<sub>2</sub> sensors when removing the exhaust system. There is one connected to each catalytic converter.

**PASSENGER SIDE**

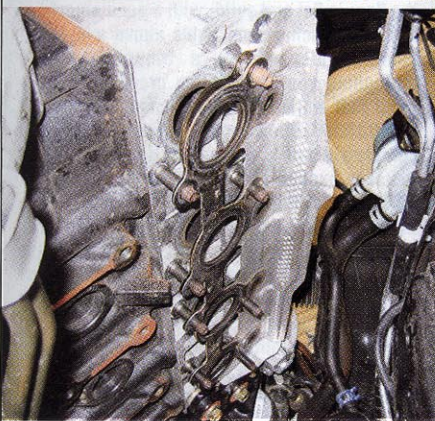
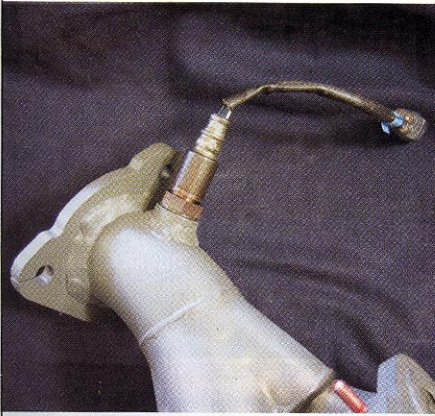
**Step 4.** On the passenger side, remove the four bolts attaching the heatshields to the factory manifold.

**Step 5.** Next, carefully unplug the O<sub>2</sub> sensor from its harness.

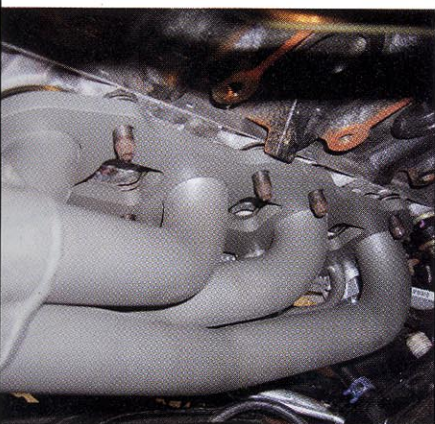


**Step 6.** Remove the nuts attaching the air tube to the manifold. Loosen the air tube on the other end to allow some flexibility. Now remove the nuts attaching the factory manifold to the cylinder head. Remove the manifold; retain the air tube gasket and nuts. Retain the factory gasket for re-use.

Step 7. Using a small wire brush or similar instrument, clean any carbon deposits left on the head surface. Be careful not to gouge the aluminum head.



Step 8. Install a collector bolt into the hole below the O<sub>2</sub> sensor. Transfer the O<sub>2</sub> sensor from the factory manifold to the new passenger-side header. Apply a small amount of antiseize to the threads for the sensor before installing it in the new header. Use caution not to drop or damage the sensor — they're fragile.



Step 9. Install the new JBA header using the factory gasket and fasteners. Torque to 33 lb-ft. Reconnect the air tube and tighten the bolt ends.

**DRIVER SIDE**

Step 10. Unbolt the dipstick bracket from the head and remove the dipstick tube. Repeat steps 4 through 8 in the same order removing the factory manifolds and installing the new JBA Header.

Step 11. Install the driver-side catalytic converter.

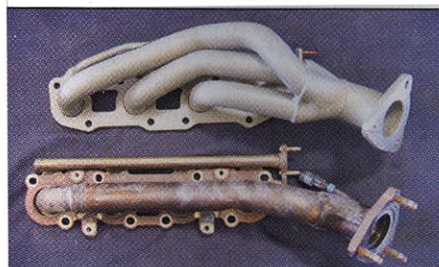
Step 12. Connect the exhaust system to the new headers using hardware and gaskets supplied. Reconnect the O<sub>2</sub> sensors and the dipstick.

Step 13. Check to ensure adequate clearance between the header and shifter cable. More clearance can be gained by adjusting (bending) the brace on the fenderwell.

Step 14. Recheck everything!

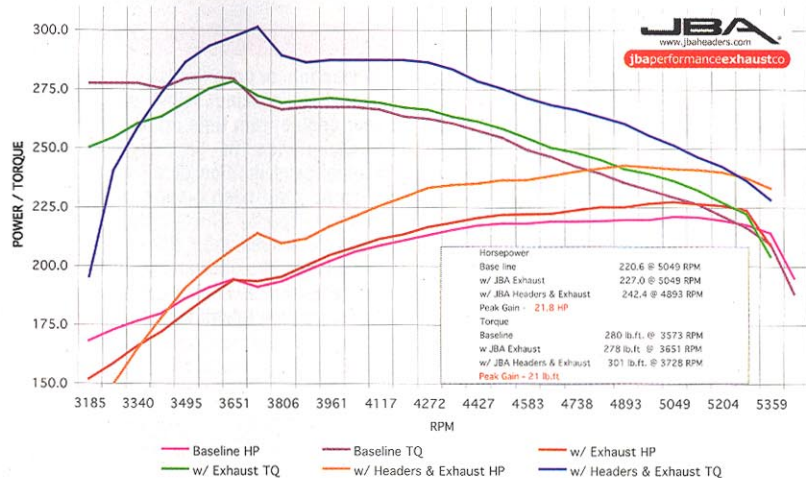
Step 15. Start the engine and let it warm up. Check for leaks. Shut the engine off and let it cool down. Check to make sure all fasteners are tight.

Now that our headers are installed, we quickly attached the JBA Evol Exhaust System. This system is very easy to install, with no welding required. Simply bolt the inlet tube in place, connect the muffler using the supplied bolts, and finish with the addition of the rear exhaust tube with chrome tip. The muffler uses 2-1/2-inch in and out ports. **4WD**



Take a look at this image of the stock factory manifold compared with the new JBA Cat4ward Header with ceramic-titanium coating. The JBA headers use 3/8-inch-thick laser-cut flanges, 409 stainless-steel tubes, and a JBA patented Firecone collector, and are available in stainless-steel, silver-polished, and ceramic-titanium coatings for great looks.

2005 Toyota Tundra 4.7L  
with JBA Cat4ward® Headers 2011SJT and JBA Performance Exhaust 30-9014



**DYNO CHART**

Now that everything is installed, we turn to the dynamometer, where we can really see what amount of horsepower and torque our new performance upgrades provided. We were very pleased to show an improvement of 21.8 hp at 4,983 rpm and an improved torque rating of 21 lb-ft at 3,728 rpm. Keep in mind that this is to the wheels, not the crank. Gaining that amount of power is impressive, especially considering these are bolt-on applications. Traveling home from JBA, we took a detour and headed east toward the 8 freeway, where we could test the new power climbing up and over hills and mountain passes. We were

pleased with the increased throttle response and how much easier we made it through our rollercoaster road course. We definitely recommend giving JBA a call to order your set of headers and exhaust today.

**SOURCE**

**JBA PERFORMANCE EXHAUST**  
(800) 830-3377  
www.jbaheaders.com